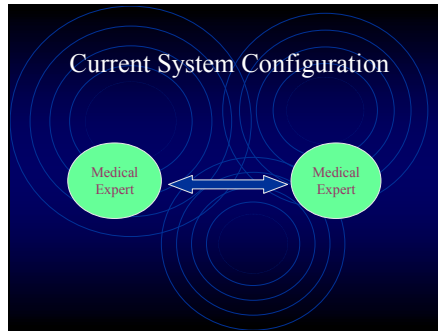
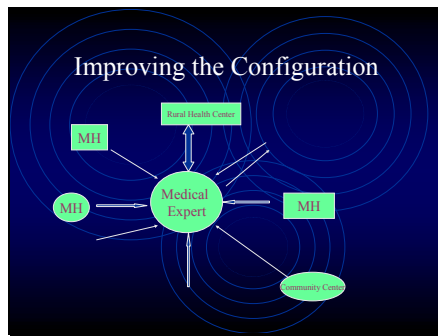


Slide 1

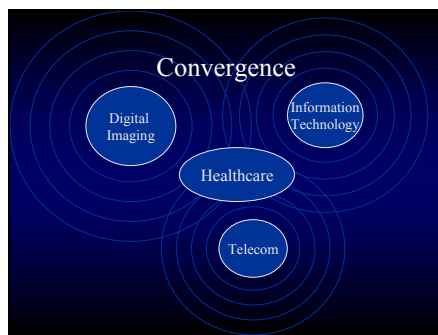


Slide 2

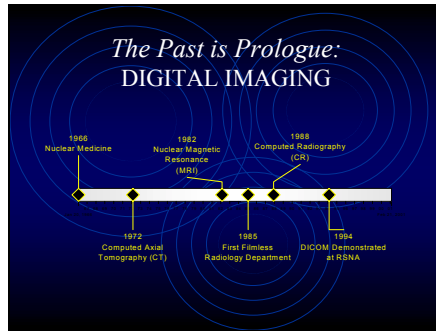


Better information leads to better decisionmaking and better outcomes!!!!!!!!!!  
This is as true in design of networks as it is in providing health care; don't let the systems get designed the old-fashioned way.

Slide 3

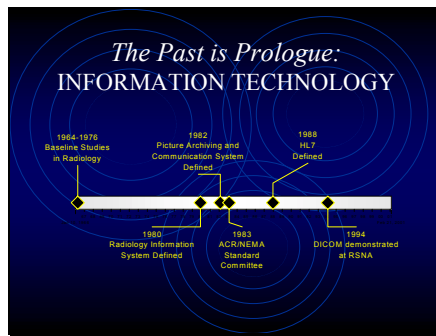


Slide 4



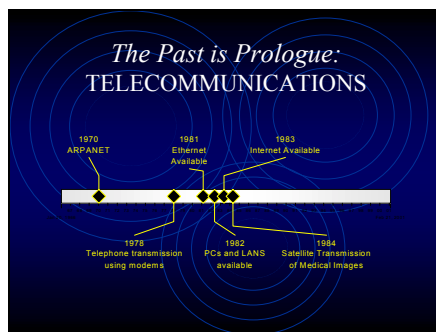
Madigan: at Tacoma, Washington

Slide 5



Department management  
Automated reporting  
Film Library  
Patient Scheduling  
1980 -- RISC  
1982 -- DECRAD first RIS available  
1985 -- ACR/NEMA Version 1/0

Slide 6



## Slide 7



Health threats: increasing globalization means that diseases once thought no longer a problem in western Europe and the US are re-emerging – take tuberculosis for example. This is a problem here in the states when a person infected shares public transportation or coughs over the food in a restaurant kitchen. Immigration patterns have caused a resurgence in this disease. Lifestyle changes and dietary issues are causing problems here in the US (and in Mexico) and possibly other countries as well. Diabetes is becoming more prevalent in the US and Mexico, leading to people sicker sooner, with more drain on the economy – suffering from diabetic blindness and increased risk of heart attack. These issues pose a drain on society. In Africa, AIDS, malaria and tuberculosis pose some of the same societal burdens. At home and abroad, the world waits to see if anyone else will try to use anthrax or other biological or chemical agents to make a political or militaristic statement. These conditions require us to think about healthcare delivery in new ways. Telemedicine, linking one major research institution with another, is not enough. We need to think about having the ability to deploy medical expertise to the site of a disaster – without moving the affected populations to multiple facilities sometimes. We need to be able to deliver real-time reports on conditions to transient populations, so that we treat disease, even if we cannot constantly find the individuals. And, we need to monitor populations that are at risk, to intervene before problems arise

that drain our resources more than preventing them would. (An ounce of prevention beats a pound of cure!)

## Slide 8



**BANDWIDTH DEMAND:** one four view mammogram is 64 Megabytes of data, to make the real-time element work, it needs to transmit in about 5 minutes, which requires T-1 or more. Why is real-time important? What happens if there is a delay? Where do the patients wait?

Let's talk about other medical images --- an MRI, which takes "slice" views generates 100 megabytes of data. But, it is not as easy to move MRI machines around, although some companies do that. A CT is about 100 megabytes also. Again, there are not as many portable or mobile CTs.

What we are seeing much more of is portable ultrasound. The technology is developing rapidly and the same device can be used for a wide range of medical imaging purposes. However, ultrasound produces a tremendous volume of data, which often needs to be streamed almost as a video feed to be effective. This means lots of bandwidth. But, the output is digital and can be fed into the

infrastructure for transmission. (See photo below)

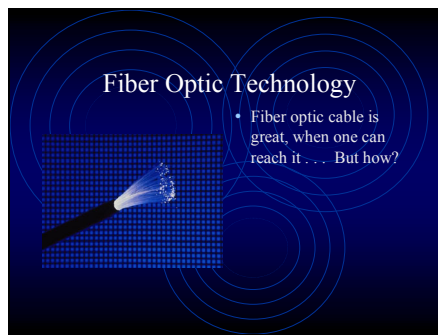
Also, we are discussing digital microscopes. These are marvelous devices that capture a digital, full color, image of a slide. This can be used to send an expert pathologist the key images to make a diagnosis. The images are as data rich as an x-ray but in color, so that each slide is going to be 30 to 40 megabytes of data.

Whether fixed or mobile, telehealth offers more demand growth in telecom than almost anything we have ever seen. We just have to help it happen.

Anyone here have a mile-long retractable fiber optic cable on their mobile health van?


Obviously, although the bandwidth is great, this is not the starting point for a mobile health interface

Slide 9



## Slide 10

### Mobility?



- Choose the right vehicle to get care to the patients and their communities

## Slide 11

### Successes

- IHealthbeat reported on Oct. 3 that a team of burn specialists in Australia provided follow up care to a burn victim using digital images. The patient returned home much sooner – saving costs for gov't and for family.

